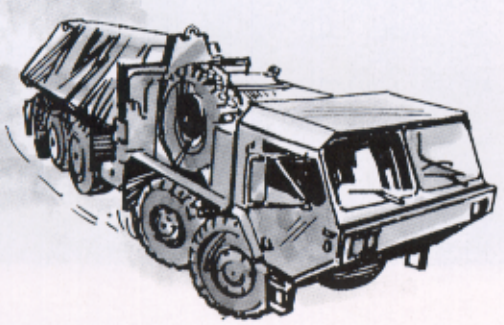
PLS: More Than an Ammo Carrier

by Major Wallace J. Tubell, Jr.

Moving fuel forward on the battlefield? Allowing maintainers to keep up with the units they support? Hauling supplies, launching bridges, even placing mines? There seems to be no end to the roles the palletized loading system will play in the Force XXI Army.



In his article, "Palletized Loading System: Not Just Another Truck" (September–October 1996 issue of *Army Logistician)*, Captain Peter M. Haas discussed some of the enhancements with which units are experimenting in order to increase the effectiveness of the palletized loading system (PLS). I would like to expand upon Captain Haas' article and give you some idea of the ever-increasing potential offered by the PLS that we see at the Office of the Project Manager (PM) for Heavy Tactical Vehicles in Warren, Michigan.

Today, the PLS serves primarily as a transportation platform used to distribute ammunition to cannon artillery battalions. The PLS is found in those battalions, as well as in the ammunition transfer point sections of forward support battalions and in the ammunition companies (both direct support and general support) and medium truck companies of corps support battalions. The types and wartime missions of units equipped with PLS indicate that the primary mission for the PLS is moving large volumes of cannon artillery ammunition at a high rate in wartime. In peacetime, however, units use the PLS for a wide variety of missions. This was well documented in Captain Haas' article.

But we are just barely scratching the surface of how this highly versatile system can be used. Let me describe some of the many other capabilities and enhancements of the PLS now under development.

Fuel Supply

Fuel is second only to ammunition among battlefield commodities in its sheer volume and its high priority for transport. European armies use their equivalent of the PLS to supply fuel forward on the battlefield. In the U.S. Army, we too are looking at PLS as a transportation platform for distributing bulk fuel. Two concepts currently are under consideration.

Under the first concept, a 5,000-gallon tank, complete with pump, filter, hoses, and other equipment, would be mounted on the XM1105 PLS chassis. This chassis has no load-handling system, no materials-handling crane, and no self-recovery winch. This "stripped down" PLS chassis is capable of carrying a 22.5-ton load. We believe we can design and mount a 5,000-gallon tank on this chassis that will give PLS mobility to the 5,000-gallon tanker fleet. The Tank-Automotive Research, Development, and Engineering Center (TARDEC) at Warren, Michigan, is currently modeling this concept using portions of their world-

class virtual prototyping process.

The second concept calls for simply constructing and mounting on a flatrack either a 2,500-gallon or 3,000-gallon fuel tank with pumps, filters, and hoses or a 3,500-gallon bulk storage tank without the pumps, filters, and hoses. The 2,500-gallon fuel rack has the advantage of being compatible with the 11-ton-capacity XM1120 heavy, expanded mobility, tactical truck load-handling system (HEMTT–LHS). One standard M1074/1075 PLS truck and M1076 PLS trailer could place 5,000 to 7,000 gallons of fuel nearly anywhere on the battlefield in just about 5 minutes.

There is still room for discussion about which PLS fuel delivery system will be the optimum solution. The PM-Heavy Tactical Vehicles and TARDEC continue to support the Army Combined Arms Support Command (CASCOM), at Fort Lee, Virginia, in its efforts to solidify a requirement.

Repair

The Ordnance community has been searching for more than 10 years for a vehicle system that will provide organizational and direct support (DS) maintenance personnel with sufficient mobility, lift, electrical power, compressed air, and storage space for tools and repair parts so they can effectively keep up with their supported units. The forward repair system-heavy (FRS–H) will meet this need.

The FRS–H is designed to provide an enhanced diagnostic and repair capability for heavy weapon systems and the high mobility needed to keep pace with Force XXI units. The flatrack-based FRS–H system can provide onsite organizational/DS maintenance either as a mounted system or a system dismounted from the PLS. The FRS–H is a completely self-contained, highly mobile maintenance system capable of providing support wherever it is needed. The onboard equipment includes tool sets; modern tool storage cabinets; power tools; electrical power; compressed air; test, measurement, and diagnostic equipment; computers; digital diagnostic equipment; and communication capabilities.

The FRS–H is undergoing a CASCOM-sponsored concept evaluation program at Fort Hood, Texas, in fiscal years 1997 and 1998. The FRS–H is being employed in both ordnance and engineer units, just like contact trucks. Recently, the Army Engineer School at Fort Leonard Wood, Missouri, indicated a strong interest in the FRS–H. The Engineers will likely employ the FRS–H in divisional engineer battalions equipped with the Grizzly and Wolverine and also in the newly designed multirole bridge company. [For more information on FRS–H, see Major Tubell's article, "A 'Fix Forward' Vehicle for the Battlefield," *Army Logistician*, July-August 1997, page 24.]

Transportation of General Supplies

In addition to its traditional role of distributing ammunition on flatracks, the ability and effectiveness of PLS to distribute all classes of supplies is being evaluated as part of the Task Force XXI Advanced Warfighting Experiments. The 704th Main Support Battalion of the 4th Infantry Division (Mechanized) and the 13th Corps Support Command have been provisionally provided with 24 PLS's to use in distributing all classes of supplies to the division's Experimental Force maneuver brigade. These PLS's will deliver all commodities of supplies directly to consuming units on flatracks. Since the supported units are not equipped with PLS's of their own, supporters will have to use the outstanding mobility of PLS to provide supplies to supported units regardless of terrain. This will be true unit distribution.

Container handling. The PLS–container handling unit (CHU) provides the logistician with the capability to load and unload and transport ISO-compatible shelters and containers without flatracks and supporting materials-handling equipment. This capability is appreciated by logisticians at the Army Medical De-

☐ The HEMTT–LHS moves cargo on a flatrack onto an M1076 trailer. This application of PLS technology to the HEMTT chassis can load, unload, and move up to 11 tons of supplies.

partment (AMEDD) Center and School at Fort Sam Houston, Texas. That is because a combat support hospital (CSH) has nearly 80 such containers but is only 20 percent mobile with its organic assets. The PLS–CHU in corps support battalions will be a big help to a CSH when it moves forward on the battlefield.

Flatracks. The containerized roll in/out platform (CROP) is simply an A-frame flatrack that is slightly narrower and shorter than a standard model. Because of its smaller size, the CROP can fit within an 8- by 20-foot ISO shipping container. That means the CROP can be preloaded with supplies tailor-made for a particular unit's needs and then packed in a shipping container for security and strategic mobility. The container will be opened at the corps storage area, or perhaps the battlefield logistics "hub," and standard PLS trucks then will transport the CROP directly to the requesting unit. By using the PLS–CHU with the CROP, supplies can be moved directly from the depot to the foxhole with minimal handling and intransit damage and within a secured container.

In addition to the CROP, three other flatrack enhancements are coming soon. The first two are simply a sideboard kit and a tarp for the standard M1077 A-frame flatrack. The sideboard kit performs the same functions as the sideboard kit of any cargo truck. Such kits have been sorely missed and will be welcomed by the field. The tarp, or more correctly, the flatrack jacket, is much more valuable than the standard cargo truck tarp. It has tie-down straps integrated into its design so it can fit snugly atop loads of various shapes and sizes. Sideboard kits and flatrack jackets are being issued to PLS units beginning late in fiscal year 1997 and continuing into 1998.

The third flatrack enhancement is still on the drawing board but may be available soon. It is simply a conversion kit that turns a standard HEMTT cargo bed into a flatrack. (There are numerous used HEMTT cargo beds available at Letterkenny Army Depot, Pennsylvania, for this purpose.) Although they cannot be stacked like other flatracks, these HEMTT cargo bed flatracks will be very useful for post or training center missions, such as turning in class IX (repair parts) and moving trash, barrier materials, and sand bags.

Water supply. New CASCOM-approved doctrine for water resupply calls for unit, as opposed to supply point, distribution. This new doctrine makes the semitrailer-mounted fabric tank obsolete because it can be transported only when full or empty and therefore cannot be moved around to supply a number of units. Unit distribution, by contrast, requires a hardwall bulk tanker with high mobility to deliver bulk water to the battalion and company levels. A fiscal year 1996 Army Tank-automotive and Armaments Command (TACOM) study using the CASCOM-approved distribution system analyzer model found PLS to be a highly effective water distribution platform. Concepts of operation and tactics, techniques, and procedures (TTP) remain to be specified, but clearly PLS has the potential to serve as the materiel solution to this new operational requirement.

Non-Artillery Ammunition Resupply

Perhaps the most important complement to the PLS for non-artillery ammunition resupply is the XM1120 HEMTT–LHS. This system is simply an M977/978/985 HEMTT on which the cargo bed and crane, or 2,500-gallon fuel tank and pumps, filters, and hoses, have been replaced by a standard PLS load-handling system. This gives the HEMTT class of vehicles the capability to load, unload, and transport PLS flatracks with cargo loads weighing up to 11 tons.

The HEMTT–LHS enables the logistician at or below the brigade level to keep up with the Army's heavy maneuver, multiple launch rocket system (MLRS), aviation, air defense, fire support, and engineer battalions. When supported by PLS, the HEMTT–LHS can resupply combat units in the forward area at a higher rate than the standard HEMTT cargo and fueler variants can.

The HEMTT–LHS will transport ammunition, fuel, and all other classes of supply directly to combat units. Fuel will be transported in either the Marines'

"sixcon" system (1,800 gallons with pumps, hoses, and filters) or in a conceptual 2,250- or 2,500-gallon fuel rack designed for the HEMTT–LHS. Ammunition and all other supplies will be transported on standard PLS flatracks.

The HEMTT–LHS is not meant to replace all existing HEMTT cargo and fuel supply vehicles. Instead, it will complement the existing HEMTT fleet by applying PLS technology to the HEMTT chassis. The HEMTT–LHS is undergoing a CASCOM-sponsored concept evaluation program in fiscal years 1997 and 1998. Units targeted to receive the HEMTT–LHS in this evaluation include divisional tank and mechanized infantry battalion support platoons, divisional forward support companies, aviation and engineer battalions, and MLRS batteries and battalions.

Mobility and Countermobility

The HEMTT–LHS concept already has been tested and proven by the Army Corps of Engineers. Bridging units in the future will replace their 5-ton bridge transport trucks with a variant of the HEMTT–LHS called the common bridge transporter (CBT). The LHS mounted on the HEMTT chassis is ideal for launching and retrieving floating bridge sections and bridge erection boats. The CBT's LHS and its interface with standard flatracks also make it an ideal transporter for dry support bridges. In fact, by transitioning from the 5-ton bridge transporter to the CBT, the Engineers are using LHS technology to rewrite their doctrine for bridging. In the future, bridges will become a commodity of supply to be distributed to engineer bridging companies much like ammunition is distributed today to artillery battalions. CBT's will be fielded to National Guard and Reserve engineer bridging units beginning in fiscal year 1998.

After their positive experience with the CBT, the Army Corps of Engineers has expanded its interest in LHS technology and the PLS. The Engineers see the PLS as a common platform for transporting and operating specialized pieces of heavy construction equipment. Specific PLS applications that the Engineers have in mind include the following.

Heavy dry support bridge (HDSB) launcher. The HDSB is currently under development. The Engineers' current concept calls for HDSB bridge sections to be transported by CBT's. The HDSB launcher, however, will be a new variant of the PLS. The HDSB launcher mechanism will replace the LHS, creating a dedicated vehicle for bridge launching. The PLS is the only wheeled vehicle in the Army's inventory with the mobility, size, weight, and hydraulic power to launch the HDSB across spans of 40 meters. The first prototypes will undergo testing in fiscal year 1999.

Heavy construction equipment. The PM–PLS has purchased a dump truck variant of the PLS. To achieve this new capability, the truck itself requires no modifications. Instead, an interface kit is provided with the dump bed that works with the LHS hook arm and the onboard hydraulics, air, and electrical power systems of the PLS. The Army Engineer School and the PM–PLS are looking at developing and testing other construction mission packages, similar to the dump bed, that would allow the PLS to function as a concrete mixer, bituminous coal distributor, mobile service station, or water distributor.

Adopting the PLS can result in updated doctrine, as in the case of the quartermaster mission to distribute water by unit rather than supply point distribution. Thanks to PLS, today's dump truck is tomorrow's concrete truck or 16.5-ton cargo PLS capable of transporting any class of supply. And since half of the mission packages can be transported on PLS trailers instead of dedicated trucks, PLS allows the engineer combat heavy battalion to move more on each trip and with each driver and complete the mission in fewer round trips.

☐ The PLS truck with prototype 3,000-gallon fuel tank, pumps, filters, and hoses mounted on a flatrack (above left) is one PLS enhancement for moving fuel currently under study. The PLS-container handling unit, shown above with an 8- by 8- by 20-foot container, will be of particular value to combat support hospitals. The dump truck variant of PLS (right) is equipped with the prototype 12-cubic-yard dump body.

Mine and countermine systems. Studies now underway are looking at using the PLS as a chassis for both mine and countermine systems. The mine mission would consist simply of mounting a mine-dispensing system such as Volcano on a flatrack. The concept for the countermine mission envisions using high-powered water jets to literally cut away the earth to expose mines. A PLS with an armored cab would be an ideal platform for this mission, since it could carry both high-pressure pumps and hoses and the large volume of water needed. For now, these are just concepts under study, but they do demonstrate, once again, the potential of the PLS.

The potential of the PLS is practically unlimited. The PLS is a system with the mobility, size, weight, and power required to deliver any class of supply or any item of equipment, up to 16.5 tons, nearly anywhere on the battlefield. When complemented by the HEMTT–LHS in armor, aviation, MLRS, mechanized infantry, and other heavy battalions, the PLS has the potential to support a nearly seamless factory-to-foxhole logistics system. What Captain Haas and I have described is only the beginning. Just visit your nearest PLS unit and talk to the soldiers, noncommissioned officers, and officers to find out the next application for PLS. **ALOG**

Major Wallace J. Tubell, Jr., is assigned to the Office of the Project Manager for Heavy Tactical Vehicles in Warren, Michigan. He is an Acquisition Corps and Ordnance Corps officer with a B.S. degree in mechanical engineering from the Florida Institute of Technology and a master of engineering management degree from Saint Martin's College in Lacey, Washington. He is a graduate of the Army Logistics Management College's Materiel Acquisition Management Course and has been selected to attend the Army Command and General Staff College.

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